4.14 Waste Management

This section summarizes the management of wastes (hazardous, mixed low-level, low-level, transuranic, industrial solid, and high-level) and presents an overview of the current status of the various waste types generated, stored, and disposed of at INEEL. This section also summarizes Waste Minimization/Pollution Prevention programs in place to reduce the hazard and quantity of waste generation at INEEL.

The total amount of waste generated and disposed of at INEEL has been reduced through waste minimization and pollution prevention. More detailed descriptions can be found in the *Annual Report of Waste Generation and Pollution Prevention Progress* (DOE 1997a) and the DOE *Pollution Prevention Plan* (DOE 1997b).

INEEL has programs and physical or engineered processes in place to reduce or eliminate waste generation and to reduce the hazard, toxicity, and quantity of waste generated. Waste is also recycled to the extent possible before, or in lieu of, its storage or disposal. In addition, the site has achieved volume reduction of radioactive wastes through more intensive surveying, waste segregation, and use of administrative and engineering controls. These programs and their accomplishments have been described in various documents including site treatment plans (DOE 1998a) and annual progress reports (DOE 1997a).

Waste minimization technologies expected to be used to ***reduce the liquid waste going into the Tank Farm*** include using non-chemical decontamination systems, improving practices in the Process Equipment Waste Facility, and recycling acids for use in the New Waste Calcining Facility calciner. A key milestone under the settlement agreement ***among*** DOE, the State of Idaho, and the U.S. Navy calls for the Tank Farm to be empty of all liquid radioactive waste by 2012. Efforts initiated as a result of the Liquid Waste Minimization Incentive Plan are expected to play a major role in the INEEL's ability to meet this milestone.

Table 4-***30*** provides a summary of waste volumes for individual waste types at INEEL. Each waste type is then discussed further in the sections that follow.

4.14.1 INDUSTRIAL SOLID WASTE

Industrial and commercial solid waste is disposed at the INEEL Landfill Complex in the Central Facilities Area. About 225 acres are available for solid waste disposal at the Landfill Complex. The capacity is sufficient to dispose of INEEL waste for 30 to 50 years. Recyclable materials are segregated from the solid waste stream at each INEEL facility. The average annual volume of waste disposed of at the Landfill Complex from 1988 through 1992 was 52,000 cubic meters (EG&G 1993). For 1996 and 1997, the volume of waste was approximately 45,000 and 54,000 cubic meters, respectively. ***The average annual volume of waste disposed of from 1998 through 2001 was approximately 43,000 cubic meters (Pruitt 2002a).***

Table 4-30. Summary of waste volumes awaiting treatment and disposal at INEEL.[a]

Waste type[b]	Current inventory (cubic meters)	Annual generation (cubic meters)
Industrial solid[c]	–[d]	***43,000***
Hazardous waste[e]	None[f]	120
MLLW	***2,100***[g]	***160***[g]
LLW	***980***[h]	***2,900***[h]
Transuranic waste[i,j]	65,000	–
HLW (calcine)	***4,400***	–
Mixed transuranic waste/ SBW	***1,000,000 gallons***	–

a. Does not include waste already disposed of at the Radioactive Waste Management Complex or other locations.
b. Waste types: MLLW = mixed low-level waste; LLW = low-level.
c. Source: ***Pruitt (2002a).***
d. Dash indicates no information is available.
e. Source: DOE (1996).
f. Waste is shipped off-site before any significant inventory buildup.
g. Source: DOE (***2002***).
h. Source: ***Pruitt (2002b)***.
i. Source: DOE (1995).
j. A portion of the 65,000 cubic meters of transuranic waste retrievably stored at the Radioactive Waste Management Complex may be reclassified as alpha MLLW. It has been estimated that approximately 40 percent of the 65,000 cubic meters is alpha MLLW and 60 percent is actually transuranic waste.

4.14.2 HAZARDOUS WASTE

The INEEL's hazardous waste management strategy is to minimize generation and storage, and use private sector treatment and disposal. Approximately 120 cubic meters of hazardous waste are generated at the site each year. Hazardous waste is treated and disposed of at offsite facilities and is transported by the contracted commercial treatment facility. The waste is packaged for shipment according to the receiving facility's waste acceptance criteria. The waste generator normally holds waste in a temporary accumulation area until it is shipped directly to the offsite commercial treatment facility.

4.14.3 MIXED LOW-LEVEL WASTE

Presently, there are about ***2,100*** cubic meters of mixed low-level waste in inventory at INEEL (DOE ***2002***). In addition to the current volume of mixed low-level waste in inventory at the site, approximately ***160*** cubic meters of mixed low-level waste is generated annually (DOE ***2002***). Several mixed waste treatment facilities exist at the INEEL.

4.14.4 LOW-LEVEL WASTE

Approximately 170,000 cubic meters of low-level waste have been disposed of at the Radioactive Waste Management Complex (DOE 1995, 1997c). Currently, about ***980*** cubic meters of low-level waste are in inventory at INEEL (***Pruitt 2002b***). All on-site-generated low-level waste is stored temporarily at generator facilities until it can be shipped directly to the Radioactive Waste Management Complex for disposal. DOE expects ***to stop accepting contact-handled low-level waste and remote-handled low-level waste at*** the Radioactive Waste Management Complex in ***2020 (Seitz 2002)***.

4.14.5 TRANSURANIC WASTE

Approximately 65,000 cubic meters of transuranic and alpha-contaminated mixed low-level waste are retrievably stored, and 60,000 cubic meters of transuranic waste have been buried at the Radioactive Waste Management Complex (DOE 1995). The Radioactive Waste Management Complex is made up of seven Type II storage modules, each of which can hold up to 4,465 cubic meters of waste in drums or

boxes. The total storage capacity is 31,255 cubic meters. The processing capacity of the Advanced Mixed Waste Treatment Facility is 6,500 cubic meters per year and the expected duration of facility operation is 30 years (DOE 1999). All 65,000 cubic meters of the retrievably stored waste were considered to be transuranic waste when first stored at INEEL. In 1982, DOE Order 5820.2 changed the definition of transuranic waste. The new definition excluded alpha-emitting waste less than 100 nanocuries per gram at the time of assay. Since all of the waste was initially considered to be transuranic waste, the alpha wastes were comingled in the same containers as the transuranic waste.

DOE has not determined the disposition of the buried transuranic waste (DOE 1995). However, DOE currently plans to treat and repackage the retrievably-stored transuranic and alpha-contaminated low-level waste so that all the resulting waste qualifies as transuranic waste. This waste would then be certified and shipped to the Waste Isolation Pilot Plant in New Mexico for final disposition. The Record of Decision from the *Waste Isolation Pilot Plant Disposal Phase Final Supplemental Environmental Impact Statement* was issued in January 1998 (DOE 1998***b***) and the first shipments of transuranic waste from the INEEL to the Waste Isolation Pilot Plant occurred in April and August 1999. Since the October 1988 ban by the State of Idaho on shipments of transuranic waste to INEEL, DOE has shipped only small amounts of transuranic waste generated on the site to the Radioactive Waste Management Complex for interim storage.

4.14.6 HIGH-LEVEL WASTE

From 1952 to 1991, DOE processed spent nuclear fuel and irradiated targets at the INTEC. The resulting liquid mixed HLW was stored in the Tank Farm. Mixed transuranic waste/SBW generated from the cleanup of solvent used to recover uranium and from decontamination processes at the INTEC is also stored in the Tank Farm. Although not directly produced from spent nuclear fuel processing, mixed transuranic waste/SBW at INEEL has been historically managed as HLW because of some of its physical properties. For purposes of analysis, the EIS assumes that SBW is mixed transuranic waste.

At present, approximately ***4,400*** cubic meters of HLW calcine are stored at INTEC. INEEL no longer generates liquid mixed HLW because spent nuclear fuel processing has been terminated (DOE 1995). All liquid mixed HLW produced from past processing has been blended and reprocessed, through calcination, to produce granular calcine. Mixed transuranic waste/SBW is generated from incidental activities associated with operations at INTEC (DOE 1996). Currently, there are approximately ***1*** million gallons of mixed transuranic waste/SBW in storage at INTEC and this is expected to be reduced to about 800,000 gallons by the time processing begins under the proposed action (Barnes 1999).